



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

JAN 26 1995

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MEMORANDUM

SUBJECT: Explanation of Significant Differences
Missouri Electric Works Site
Cape Girardeau, Missouri

FROM: Michael J. Sanderson, Acting Director
Superfund Division

for Martha R. Steincamp, *Barbara Schull*
Office of Regional Counsel

TO: Dennis Grams, P.E.
Regional Administrator

An Explanation of Significant Differences (ESD) has been prepared to modify the Record of Decision (ROD) for the Missouri Electric Works site. The ROD was signed in 1990 and identifies on-site incineration as the selected remedy. The ESD modifies the language of the ROD to identify on-site thermal treatment as the selected remedy. On-site thermal treatment is defined to include on-site incineration and thermal desorption.

The Missouri Department of Natural Resources (MDNR) has been notified of and concurs with the ESD. This is confirmed in the January 6, 1995, letter from MDNR to EPA.

An availability session was held in Cape Girardeau, Missouri, on December 15, 1994. The purpose of the availability session was to inform the citizens of Cape Girardeau of the status of the site and to also inform them of the possibility that modification to the ROD could occur. Representatives from EPA, MDNR and the Settling Defendants attended the availability session. No concern has been expressed.

We are recommending that you sign the attached ESD for the Missouri Electric Works Site.

Attachment



S00153924
SUPERFUND RECORDS

#153169



MEW Site File
Break5_000544

**EXPLANATION OF SIGNIFICANT DIFFERENCES
IN THE RECORD OF DECISION
MISSOURI ELECTRIC WORKS SITE
CAPE GIRARDEAU, MISSOURI**

**Prepared by:
U.S. Environmental Protection Agency
Region VII
Kansas City, Kansas
February 1995**

EXPLANATION OF SIGNIFICANT DIFFERENCES

INTRODUCTION

This Explanation of Significant Differences (ESD) presents the rationale for modifying the remedial technology identified in the September 1990 Record of Decision (ROD) for the Missouri Electric Works Site ("MEW"). This ESD was prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601 et seq., as amended, and Section 300.435(c)(2)(i) of the National Contingency Plan (NCP).

A feasibility study for thermal desorption was submitted to the Environmental Protection Agency (EPA) and the Missouri Department of Natural Resources (MDNR) by the Settling Defendants for consideration and evaluation in September 1994. The feasibility study discussed the merits of including on-site thermal desorption as a remedial technology for the MEW site in addition to on-site incineration as set forth in the ROD. Thermal desorption technology was not a proven technology in 1990 when the MEW ROD was signed. Based on the information contained in the "Thermal Desorption Feasibility Study," case histories from Superfund sites using thermal desorption technologies, and "Innovative Site Remediation Technology, Thermal Desorption, Volume 6", EPA Region VII has concluded that the MEW ROD should be adjusted to state that thermal treatment, which can include either thermal desorption or on-site incineration, will be implemented at the Site. The feasibility study, the EPA thermal desorption publication, and the ESD will become part of the Administrative Record pursuant to Section 300.825(a)(2) of the NCP. The Administrative Record for the MEW site is located in the Cape Girardeau Public Library, Cape Girardeau, Missouri and at the EPA offices at 726 Minnesota Avenue, Kansas City, Kansas.

SITE HISTORY

The Missouri Electric Works site is located adjacent to U.S. Highway 61 (South Kingshighway) in a predominantly commercial/industrial area of Cape Girardeau, Missouri. The MEW site includes all areas that have been identified as having polychlorinated biphenyl (PCB) contamination originating from the Missouri Electric Works facility.

Missouri Electric Works, Inc., sold, serviced and remanufactured transformers, electric motors, and electrical equipment controls. During past operations, Missouri Electric Works, Inc., reportedly recycled materials from old units, selling copper wire and reusing dielectric fluids from the transformers. The salvaged dielectric fluid (transformer oil) was filtered through Fuller's earth for reuse. An estimated 90 percent of the transformer oil was recycled.

Missouri Electric Works, Inc., operated at 824 Kingshighway, Cape Girardeau, Missouri between 1953 and 1992. According to business records obtained from MEW more than 16,000 transformers were repaired or scrapped at the Site during this time. The total amount of transformer oil that was not recycled during operation of the facility has been estimated at 28,000 gallons. In 1984, approximately 5,000 gallons of waste oil, in drums, was removed by a contractor.

Industrial solvents were used to clean the electrical equipment that was repaired or serviced. Solvents were reused until they were no longer effective. Spills and disposal of spent solvents apparently occurred on the MEW property.

Several investigations have been conducted at the MEW site to investigate the PCB contamination. Investigations performed at the Site by the EPA between 1985 and 1987 detected extensive PCB contamination of the Site soils (PCB concentrations of up to 58,000 parts per million (ppm) were detected); determined that off-site migration of PCB contamination had occurred along the drainage paths; and that measurable concentrations of airborne PCBs were present off-site. The Remedial Investigation and Feasibility Study was conducted by the MEW Steering Committee. The analytical data gathered during the remedial investigation indicated that the total area of surface soils contaminated with PCBs at concentrations greater than 10 ppm was approximately 6.8 acres. The 95 percentile confidence level of the arithmetic mean for the samples collected was approximately 5,000 ppm.

Additional groundwater investigation was conducted by the MEW Steering Committee. Significant subsurface solution features similar to caves were discovered during this investigation. In addition, PCB contamination of the groundwater was detected. The information gathered during this investigation was not sufficient to determine the rate or extent of PCB contamination in the groundwater. Accordingly, additional investigation of the subsurface groundwater regime must be conducted to gather information sufficient to identify the most suitable remedial technology. That investigation will be performed pursuant to the Consent Decree signed by the Settling Defendants and entered by the U.S. District Court on August 29, 1994.

DESCRIPTION OF SIGNIFICANT DIFFERENCES

Since the signing of the ROD in 1990 new technologies have been developed to address contamination at Superfund sites. When the MEW ROD was signed, thermal desorption was an innovative technology that had not yet been used to remove organic contaminants from soils. Thermal desorption was the subject of the Superfund Innovative Technology Evaluation ("SITE") program. Several vendors have successfully demonstrated the thermal desorption processes that they provide. Since 1990, thermal desorption has been used successfully at seven sites to separate PCBs from Site soils.

The thermal desorption process uses low-temperature indirect heat to volatilize organic contaminants from soils into a gas stream that sweeps them away. Typically, organic contaminants are removed from the contaminated medium in an atmosphere that is deficit in oxygen (combustion within the desorber unit cannot be supported). The gas sweeps the contaminants into an air pollution control (APC) system. The APC system can be categorized as either recovery-type or destructive-type. Recovery-type APC systems may include wet scrubbers, condensers, activated carbon adsorbers, or other physical/chemical treatment devices. Destructive-type APC systems include an afterburner to destroy the organic contaminants.

The operating temperatures of the primary chamber (desorber) are lower than typical incinerator operating temperatures. The application of indirect heat in conjunction with an oxygen-deficit atmosphere significantly reduces the potential for combustion of the volatilized PCBs.

The purpose of this Explanation of Significant Differences (ESD) is to identify and explain the modifications to the 1990 ROD. Because incineration and thermal desorption are very similar, the EPA is adjusting the ROD to state that thermal treatment, which can include either thermal desorption or on-site incineration, will be implemented at the Site. Either remedial process will be required to meet the performance objectives/standards identified in the 1990 ROD. Vendors marketing thermal desorption systems will be allowed to bid as well as the vendors marketing on-site incineration systems. Specifically, the following modifications are hereby made to the September 1990 MEW ROD.

- The term "on-site incineration" used in the September 1990 MEW ROD is replaced with "on-site thermal treatment". The term, "thermal treatment" is defined to include on-site incineration and on-site thermal desorption.

• The terms "incinerator", "rotary kiln incinerator", or "TSCA incinerator" used in the September 1990 MEW ROD are replaced with the term "thermal treatment system". The term "Incineration Plan" used in the ROD is replaced with "Thermal Treatment Plan".

• All performance standards and objectives identified in the ROD shall be required of the technology selected (either on-site incineration or on-site thermal desorption) to address the contaminated soils at the Site. All monitoring requirements and trigger levels identified in the ROD, i.e., treatment unit emissions, air emissions, fugitive dust emissions, shall be required regardless of the technology selected.

• The terms "incinerator ash" or "ash" used in the ROD are replaced with the phrase "residues from the thermal treatment process".

• The term "trial burn" used in the ROD is replaced with "on-site full-scale test of the thermal treatment system". The full-scale test of the thermal treatment system shall meet all the requirements identified for an incinerator trial burn, as identified in the ROD. Specifically, the full-scale test of either on-site incineration or thermal desorption treatment of the soils shall prove that the performance objectives/standards, identified in the ROD, can be attained. The phrase "trial burn plan" used in the ROD is replaced with "thermal treatment system full-scale test plan". All planning information required for a trial burn plan will be required in the thermal treatment system full-scale test plan.

• The phrase "thermally destroy the PCB-contaminated soil.." (eg., ROD, pg. 37;) is hereby replaced with "thermally destroying PCBs or separating PCBs from the PCB-contaminated soil and collecting PCBs in a recovery-type APC system. PCBs that are collected in a recovery-type APC system will be disposed of off-site by incineration. A recovery-type APC system may include unit operations for concentrating the PCBs as liquid in a condenser, adsorbing them onto granular activated carbon, or using other physical treatment unit operations."

• No constraints on the maximum amount of material treated per hour shall be applied. The actual amount of contaminated material to be treated in a unit of time shall be established during the performance test of the selected technology.

• The ROD indicates that contaminated soils would be excavated and consolidated prior to moving the thermal

treatment system on-site. This restraint is removed. Excavation and staging of the contaminated soils may occur concurrently with thermal treatment activities.

• The ROD describes a circulating bed combustor as the type of rotary kiln to be used to treat the Site soils. This specific type of mobile incinerator is no longer commercially available in the United States. The reference to this particular technology is removed. The technology used to address the contaminated soils at the MEW site will be defined to be any type of on-site thermal treatment technology capable of achieving the performance objectives, identified in the ROD, for the Site.

• The ROD specifically identifies the land area needed for the thermal treatment system. This stipulation is removed. The language is modified such that the size and geometry of the setup area will be flexible to allow for various equipment configurations.

SUPPORT AGENCY COMMENTS

The Missouri Department of Natural Resources (MDNR) has been informed of the proposed changes to the MEW ROD. In a letter dated, January 6, 1995, the MDNR indicated that it concurred with the changes to the MEW ROD deemed necessary by the EPA.

AFFIRMATION OF STATUTORY DETERMINATIONS

Considering the new information that has been developed and changes that have been made to the selected remedy, the EPA believes that the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable and relevant and appropriate to this remedial action (at the time the original ROD was signed), and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

PUBLIC PARTICIPATION ACTIVITIES

A public availability session was held in Cape Girardeau, Missouri on December 15, 1994. The purpose of the availability session was to inform the citizens of Cape Girardeau of the status of the MEW site, the possibility of an Explanation of Significant Differences (ESD), and the planned on-site test of the McLaren-Hart IRHV 200 thermal desorption system. Staff from the EPA and MDNR and representatives of the Settling Defendants and McLaren-Hart were available to answer any site-related questions asked by the attendees. Notice of the public availability session was provided to the citizens of Cape Girardeau and other interested citizens by mail and by notice in

the Southeast Missourian. Comments on the planned activities, ESD and on-site test, were accepted during the availability session.

Notice of this ESD has been published in the Southeast Missourian. The documents on which the decision was made to expand the definition of on-site thermal treatment to include thermal desorption have been placed in the Administrative Record located in the Cape Girardeau Public Library, Cape Girardeau, Missouri and the EPA Regional Office, Kansas City, Kansas. These documents are available for public review.



Dennis Grams, P.E.
Regional Administrator
U.S. EPA, Region VII

2-1-95
Date